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C O N F I D E N T I A L SECTION 01 OF 05 TAIPEI 000147

SIPDIS

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SUBJECT: GREENING TAIWAN, PART III: OFFICIALS PREDICT SUNNY
SKIES FOR SOLAR INDUSTRY

REF: A. TAIPEI 1383

[B](#). TAIPEI 1243

[C](#). TAIPEI 1207

Classified By: AIT Deputy Director Eric Madison for reasons 1.4 (b) and
(d).

[1](#)1. (U) Taiwan plans to develop a "green technologies"
industrial base through a USD 1.5 billion public investment
plan, which the authorities hope will attract a further USD
6.25 billion in domestic and foreign investment over the next
five years, create 110,000 new jobs, and drive Taiwan's
economy in the coming decades. The authorities also claim
this new, "green" industrial base will play an important role
in meeting greenhouse gas (GHG) reduction goals by
transforming Taiwan into a "low-carbon society."
Policymakers have identified photovoltaics (PV) and
light-emitting diodes (LED) as the most advanced and
promising green technology industries in Taiwan. This
message focuses on the role PVs are likely to play in
"greening Taiwan."

SUMMARY

[1](#)2. (SBU) Taiwan authorities predict that the island's
photovoltaic (PV) industry is prime for "leaping growth," and
by 2015 will generate USD 13.6 billion in output and create
45,000 jobs. A group of official, semi-official, and
non-governmental entities have been created to advocate for
the expansion of Taiwan's PV industry, and data from the past
4 years show impressive triple-digit growth rates, output
value, and production capacity for Taiwan's PV industry.
There are still bottlenecks holding the industry back from
reaching its full potential, however, and experts have
suggested that technological breakthroughs and increased
cooperation with the PRC are key to the future success of
Taiwan's PV industry. Cross-Strait cooperation, however, is

not without challenges, mostly related to intellectual property concerns, trade in raw materials, and harmonization of production standards. Domestically, important advances in promoting the use of solar energy have been made since mid-2009, including the passage of a Renewable Energy Development Act and the promulgation of wholesale prices ("feed-in tariffs") for the purchase of renewable energy. Nonetheless, geographic, climatic, policy, and other limiting factors are likely to consign solar power to just a few percent of Taiwan's installed energy capacity over the next 20 years.

AIMING FOR THE SUN

¶3. (SBU) Taiwan's economic planners have identified PVs and LEDs as the "Twin-pillar Industries" in Taiwan's plan to develop a green technologies industrial base. Officials from the Ministry of Economic Affairs (MOEA) have said the domestic PV industry already has "sufficient capacity for leaping growth," noting that Taiwan's existing industrial base and human resources pool in the semiconductor and TFT-LCD sectors are easily transferable to PV production. Taiwan is, in fact, already home to the world's fourth-largest PV cell and module manufacturing industries, with over 150 cell, module, and PV systems suppliers operating on the island. In 2008, Taiwan's Motech Industries was the world's eighth-largest PV manufacturer, with production capacity of over 450 megawatts (MW), and plans to

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increase that capacity to up to 600 MW in the near term.

¶4. (SBU) In 2008, Taiwan's PV industry output was valued at USD 3.1 billion, up from roughly USD 200 million just three years earlier, with PV products exported mainly to the EU. MOEA has estimated that Taiwan's USD 1.5 billion green technology investment plan will boost PV industry output to USD 13.6 billion by 2015, will create 45,000 jobs in PV and PV-related industries, and will make Taiwan one of the top three PV manufacturers in the world.

¶5. (SBU) In order to further stimulate the domestic PV industry, Taiwan authorities have instructed the Industrial Technology Research Institute (ITRI), the island's semi-official technology incubator, to focus R&D efforts on green energy technologies. Since 2007, ITRI's Photovoltaics Technology Center has been working closely with Taiwan's Photovoltaic Industry Association to advance the island's PV industry through advocacy, training, professional consultation, and promoting Taiwan-supported international standards. Meanwhile, SEMI Taiwan, which is under SEMI, the prominent global industry association for the microelectronics, display, and photovoltaic industries, has been a powerful advocate working to both expand PV technology development in Taiwan and harmonize PV-industry standards. SEMI has also worked closely with the Taiwan External Trade Development Council (TAITRA) to organize and host the annual "PV Taiwan Exhibition," which is Taiwan's most prominent forum for promoting its domestic PV industry. The 2009 exhibition comprised 500 booths, 236 companies from across the PV supply chain and from over 50 countries, and over 10,000 visitors. TAITRA and SEMI have already announced that the 2010 PV Taiwan Exhibition will take place from October 26-28, and organizers tell us they expect the numbers of both exhibitors and attendees to grow by 50 percent.

BREAKING THE BOTTLENECKS

¶6. (SBU) Taiwan authorities' focus on PV as a target industry for investment and promotion, timed to coincide with rising global interest in alternative energy, has yielded

impressive growth. From 2005-2008, the output value of Taiwan's PV industry grew by a multiple of 14. Over the same period, production capacity measured in megawatts increased ten-fold, and despite weak global prices, doubled again from 2008-2009. Despite the skyrocketing growth figures, however, MOEA officials and industry experts have noted a number of areas where "bottlenecks" are holding back even faster development of the island's PV industry. These bottlenecks include: a limited supply of raw materials, a dearth of innovative manufacturing processes, few autonomous production facilities, and lack of expertise in testing and verification. Bureau of Energy Director-General Yeh Huey-Ching has said that engineering technological breakthroughs in the PV sector is a priority for Taiwan researchers, and is key to success in an increasingly crowded global PV marketplace.

17. (SBU) Contacts in the PV industry have remarked that beyond technological advances, Taiwan manufacturers must also focus on increasing vertical integration in the PV industry, which will likely require closer cooperation with the PRC. A senior Taiwan PV Industry Association member noted that while Taiwan's comparative advantage is in management expertise, quality control, and services, mainland China is home to the raw materials, in particular polysilicon, that are required for PV manufacturing.

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18. (C) Mainland authorities have recognized the utility of cross-Straits cooperation, as well, and Jiangsu Province's Xuzhou city Municipal Party Committee Secretary Cao Xinping during a November 2009 visit to Taipei, told local officials that his city would offer tax breaks and attractive land prices to lure Taiwan PV companies. (Note: Xuzhou has one of the world's highest production capacities for polysilicon. End Note.) More recently, in January 2010, Taiwan's Sun Well Solar company signed a USD 600 million deal to establish a 300 MW thin-film solar production base in Jiangsu Province. Taiwan PV industry experts have told us that while Taiwan firms would likely have to work with mainland firms in order to offer price-competitive products, the long-term success of Taiwan's cross-Straits cooperation efforts will depend on whether the island's firms are able to maintain control of their PV-related intellectual property.

19. (C) According to a senior Taiwan PV Industry Association member, a cross-Straits Economic Cooperation Framework Agreement (ECFA) could promote effective Taiwan-PRC cooperation on PVs by resolving tariff issues related to the import of raw materials from the PRC and establishing cross-Straits production standards. During the December 2009 fourth-round of cross-Straits dialogue, participants did sign an agreement on industrial standards and certification, which committed both sides to consult on harmonization of standards and develop mutually acceptable certification procedures. Although formal PV-related discussions under this agreement have not yet occurred, local industry contacts generally expected that discussions on harmonizing PV standards would take place in the near-term, and cooperative cross-Straits PV projects would be launched in 2011.

FUTURE OF DOMESTIC USE STILL HAZY

110. (SBU) Taiwan's MOEA has described its PV industry investment and promotion program as part of the island's move to develop an "energy-efficient society and low-carbon economy," in line with the Ma Administration's plans to cut carbon emissions to 2005 levels by 2020 and 2000 levels by 2025. Bureau of Energy (BOE) and Taiwan Environmental Protection Administration (TEPA) officials have projected that Taiwan's installed photovoltaic capacity will grow from 4 MW in 2008 to 320 MW in 2015 and 1000 MW in 2025. However, 1000 MW would amount to only an estimated 1.8 percent of all

installed energy capacity in 2025, and only 12 percent of all installed renewable energy capacity. Local environmental NGOs have pointed out that solar energy is hardly a panacea for Taiwan's GHG emissions, which rank among the top 20 globally on a per capita basis.

¶11. (SBU) Despite solar energy's relatively small projected contributions to Taiwan's energy mix and greenhouse gas reduction efforts, Taiwan EPA and influential advisors to President Ma Ying-jeou have been strong proponents of increasing the island's use of solar power. In July 2009, the Legislative Yuan (LY) passed the landmark Renewable Energy Development Act (REDA), which aims to promote increased use of renewable energy through incentives for equipment purchases and the creation of a wholesale pricing structure ("feed-in tariff") for alternative energy. Feed-in tariffs were finally announced at the end of December 2009, following months of public hearings, with wholesale prices for solar power set at a minimum of NTD 11.12 (USD 0.35) per kilowatt-hour, well above the NTD 8 per kw/h price sought by the SEMI PV group back when REDA passed the LY. Although BOE is still finalizing regulations for the feed-in tariff, the SEMI PV group has estimated a lower-limit price of NTD 11.2

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could stimulate installation of 200-300 MW of PV capacity in 2010 alone, which would put the island on track to easily exceed the authorities' 2015 goal of 320 MW of installed PV capacity.

¶12. (SBU) We have, however, heard concerns expressed by PV manufacturers and distributors that because BOE has reserved the right to reassess the tariff rate on a yearly basis, and also to cap the amount of projects that could be approved annually for subsidies, PV use in Taiwan may not expand as quickly as initial estimates based on the current feed-in tariff rate have shown. Energy experts, meanwhile, have pointed out that although Taiwan has a sub-tropical climate, weather conditions, including insufficient sunshine and frequent typhoons, as well as air pollution, all limit the widespread use of solar energy in Taiwan. Other issues, such as the relatively high cost of PV cells relative to purchasing power, insufficient subsidies for PV equipment for private, residential use, and a lack of privately-owned roofs, have also hampered the spread of solar power as a domestic energy source. Experts in the field of "green" buildings have commented that while some PV limiting factors, like geography and weather, are beyond the authorities' control, policies encouraging new construction using building integrated photovoltaics (BIPV), and increased subsidies for private PV installation, could significantly raise the amount of installed PV capacity in Taiwan.

¶13. (C) Environmental NGOs and TEPA officials have told us that Taipower, the island's state-owned energy supplier, has been overly sluggish in embracing and promoting greater use of renewable energy, including solar power. Although REDA and feed-in tariffs offering reasonable rates of return for renewable energy suppliers will increase Taipower's purchase and distribution of solar energy, the company's revenues rely largely on the generation and distribution of energy from fossil and nuclear fuels. Critics have said Taipower has few financial incentives to ramp up its own production of solar energy, and little desire to purchase energy from others, which would affect the company's bottom line. Taipower representatives have responded that Taipower operates a number of solar power pilot projects around the island already, and is on track to install and operate 10 MW of PV capacity by 2011. Meanwhile, Taiwan's Institute of Nuclear Energy Research (INER) has been touting its own contributions to increasing the domestic supply of solar energy, noting that in December 2009, INER inaugurated Taiwan's largest solar power facility, with 141 panels capable of generating 1 MW of energy.

COMMENT

¶14. (C) Much like Taiwan's domestic electric vehicle industry (ref A), Taiwan's push to become a global PV manufacturing powerhouse is much more likely to benefit Taiwan's economy, rather than its environment. Despite initial positive signs from the recently announced feed-in tariff price for solar power, truly stimulating the domestic market for solar energy will require an integrated, island-wide push to educate and subsidize the public and private sectors, including industrial, commercial, and residential users of energy. Even with a successful promotion policy, however, barring major technological breakthroughs in the price and efficiency of solar cells, a small domestic market is likely to cap the spread of solar energy in Taiwan to just a few percent of installed energy capacity over the next 20 years. On the other hand, closer industrial ties with China, and a continued global focus on renewable energy, appear likely to

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benefit Taiwan PV producers, provided they can maintain a comparative advantage in mid- and down-stream PV production and secure their R&D advances against intellectual piracy. U.S. PV firms will continue to compete with Taiwan firms, but cooperation could offer American companies the opportunity to advance their own commercial interests by leveraging Taiwan's PV research activities, IC and TFT-LCD manufacturing expertise, and a growing body of knowledge related to PV manufacturing and marketing in the PRC.
STANTON